<u>Content Objective</u>: I will be able to apply properties of trapezoids to determine the measures of sides, diagonals, and/or angles.

TERM	DEFINITION	EXAMPLE
	A quadrilateral with exactly one pair of sides.	
	The sides of a trapezoid.	$\overline{BC}$ and $\overline{AD}$
	The sides of a trapezoid.	$\overline{AB}$ and $\overline{CD}$
	The angles to the bases.	$\angle B$ and $\angle C$ ; $\angle A$ and $\angle D$
	Each lower base angle is to the upper base angle on the same side.	∠A + ∠B = ∠C + ∠D =

**EXAMPLE 1:** Find the length of the angle indicated in the trapezoid.



X = \_\_\_\_\_

QUICK CHECK: Find the length of the angle indicated in the trapezoid.



x = \_\_\_\_\_

TERM	DEFINITION	EXAMPLE
MEDIAN	A segment that joins the of the legs of a trapezoid. It is to the bases.	

The median is equal to half the sum of the length of the bases:

MN =

EXAMPLE 2: In trapezoid ABCD, EF is a median. Find each of the following.



EXAMPLE 3: In trapezoid ABCD, EF is a median. Find each of the following.



EXAMPLE 4: In trapezoid ABCD, EF is a median. Find each of the following.

AB = 29, EF = 24

DC = <u>units</u>



**EXAMPLE 5:** In trapezoid **ABCD**, **EF** is a median. Find each of the following.

AB = 7y + 6, EF = 5y - 3, DC = y - 2

EF = \_\_\_\_\_

QUICK CHECK: In trapezoid ABCD, EF is a median. Find each of the following.

AB = 6x - 6, EF = 7x - 4, DC = 38

AB = \_\_\_\_\_

TERM	DEFINITION	EXAMPLE
ISOSCELES TRAPEZOID	A trapezoid with legs.	

Label the figure to represent each of the properties listed below:

## PROPERTIES OF ISOSCELES TRAPEZOID

1.	It has exactly one pair	_ sides.
2.	The median is equal to	-
3.	The legs are	
4.	The diagonals are	
5.	The base angles are	

D

E

Α

**EXAMPLE 6:** ABCD is an isosceles trapezoid. Find the missing measurements.



For Examples #7-8, set up and solve equations to determine the value of x.

**EXAMPLE 7:** DONE is an isosceles trapezoid.  $m \angle EDO = 110^{\circ}$  and  $m \angle DEN = (15x - 5)^{\circ}$ . Find the value of *x*.



X=\_\_\_\_\_

## QUICK CHECK:

ABCD is an isosceles trapezoid.  $m \angle ABC = 12x - 28^{\circ}$  and  $m \angle ADC = (5x + 38)^{\circ}$ . Find the value of *x*.



X=\_\_\_\_\_

**EXAMPLE 8:** TRAP is an isosceles trapezoid. PR = 3x - 7 and TA = 20. Find the value of x.



X= \_\_\_\_\_